

Appl. No. : 10/009,823
Filed : August 13, 2002

AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** An isolated or recombinant immunogenic polypeptide comprising a *Lawsonia spp.* FlgE Polypeptide, or a variant thereof, or a truncated variant thereof, wherein said variant ~~or truncated variant~~ mimics or cross-reacts with a B-cell or T-cell epitope of *Lawsonia spp.* FlgE Polypeptide, and wherein said variant has at least about 60% overall sequence identity to the 502 amino acid sequence set forth in SEQ ID NO:1.

2. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 1 wherein said polypeptide elicits the production of antibodies against *Lawsonia spp.* when administered to an avian or porcine animal.

3. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 1 which confers a protective immune response against *Lawsonia spp.* when administered to an avian or porcine animal.

4. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 1 wherein the *Lawsonia spp.* is *L. intracellularis.*

Claim 5 (Cancelled)

6. **(Currently amended)** An isolated or recombinant immunogenic polypeptide comprising:

(i) a peptide, oligopeptide or polypeptide comprising an amino acid sequence which has at least about 60% sequence identity to the amino acid sequence set forth in SEQ ID NO: 1; or

(ii) a homologue ~~or derivative of~~ (i) which mimics a B-cell or T-cell epitope of a *Lawsonia spp.* FlgE polypeptide.

7. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 6 wherein said polypeptide elicits the production of antibodies against *Lawsonia spp.* in a porcine or avian animal.

8. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 7 wherein said polypeptide confers a protective immune response against *Lawsonia spp.* in a porcine or avian animal.

Claim 9 (Cancelled)

10. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 8, wherein said protective immune response is induced in a porcine animal.

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11. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 6 wherein the *Lawsonia spp.* is *L. intracellularis*.

Claim 12 (Cancelled)

13. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 6 comprising the amino acid sequence set forth in SEQ ID NO: 1 or the amino acid sequence encoded by the FlgE-encoding nucleotide sequence of pALK11 (ATCC 207156).

14. **(Previously presented)** The isolated or recombinant immunogenic polypeptide of claim 13 consisting essentially of the amino acid sequence of SEQ ID NO: 1 or the amino acid sequence encoded by the FlgE-encoding nucleotide sequence of pALK11 (ATCC 207156).

Claim 15-16 (Cancelled)

17. **(Previously presented)** A vaccine composition for the prophylaxis or treatment of infection of an animal by *Lawsonia spp.*, said vaccine composition comprising an immunogenic component comprising an isolated or recombinant polypeptide having at least about 60% sequence identity to the amino acid sequence set forth in SEQ ID NO: 1 or an immunogenic homologue, or derivative thereof which is immunologically cross-reactive with *Lawsonia intracellularis*; and one or more carriers, diluents or adjuvants suitable for veterinary or pharmaceutical use.

18. **(Previously presented)** The vaccine composition according to claim 17 wherein the *Lawsonia spp.* is *L. intracellularis*.

19. **(Currently Amended)** The vaccine composition according to claim 17 wherein the isolated or recombinant polypeptide comprises the amino acid sequence set forth in SEQ ID NO: 1 or the amino acid sequence encoded by the FlgE-encoding nucleotide sequence of pALK11 (ATCC 207156).

20. **(Previously presented)** The vaccine composition of claim 19, wherein the isolated or recombinant polypeptide consists essentially of the amino acid sequence of SEQ ID NO: 1.

21. **(Currently Amended, Withdrawn)** A combination vaccine composition for the prophylaxis or treatment of the infection of an animal by *Lawsonia spp.*, said vaccine composition comprising:

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- (i) a first immunogenic component comprising ~~an isolated or recombinant polypeptide having at least about 60% sequence identity to the amino acid sequence set forth in SEQ ID NO: 1 or an immunogenic homologue or derivative thereof which is immunologically cross-reactive with *Lawsonia intracellularis* the isolated or recombinant polypeptide of Claim 1;~~
- (ii) a second immunogenic component comprising an antigenic *L. intracellularis* peptide, polypeptide or protein; and
- (iii) one or more carriers, diluents or adjuvants suitable for veterinary or pharmaceutical use.

Claim 22-38 (Cancelled)

39. **(Withdrawn)** The combination vaccine according to claim 21 wherein the second immunogenic component is selected from the group consisting of SodC, FlgE, hemolysin and autolysin.

40. **(NEW)** An isolated or recombinant immunogenic polypeptide comprising a *Lawsonia spp.* FlgE Polypeptide.

41. **(NEW)** The isolated or recombinant immunogenic polypeptide of claim 1 wherein said polypeptide elicits the production of antibodies against *Lawsonia spp.* when administered to an avian or porcine animal.

42. **(NEW)** The isolated or recombinant immunogenic polypeptide of claim 1 which confers a protective immune response against *Lawsonia spp.* when administered to an avian or porcine animal.

43. **(NEW)** The isolated or recombinant immunogenic polypeptide of claim 1 wherein the *Lawsonia spp.* is *L. intracellularis*.

44. **(NEW)** An isolated or recombinant immunogenic polypeptide comprising a peptide, oligopeptide or polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 1.

45. **(NEW)** A vaccine composition for the prophylaxis or treatment of infection of an animal by *Lawsonia spp.*, said vaccine composition comprising an immunogenic component comprising the isolated or recombinant polypeptide of SEQ ID NO: 1.